AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

1   1.   (Currently Amended) A method of printing with a flexible number of passes,
2   comprising:
3   obtaining print data having a content defined by data elements corresponding to a pattern
4   of dots of a colorant;
5   determining if at least one constraint on distribution of the print data exists so that
6   forming the pattern in only one pass is precluded, and, if the at least one constraint exists, then:
7   (a)   distributing subsets of the data elements, corresponding to interspersed sub-
8   patterns of the pattern of dots of the colorant, to a number of pass assignments, the number and
9   the subsets being determined by the content of the print data and the at least one constraint, and
10   (b)   delivering the colorant to overlapping regions of a print medium with passes
11   performed according to the pass assignments to form the pattern.

1   2.   (Original) The method of claim 1, wherein obtaining print data includes receiving
2   a contone form of the print data and converting the contone form to a halftone form of the print
3   data, and wherein distributing is performed with the halftone form of the print data.

1   3.   (Withdrawn) The method of claim 1, wherein delivering is performed with a
2   printhead having a plurality of nozzles, and wherein determining includes obtaining a constraint
3   corresponding to a limit on at least one of a rate of firing and a frequency of firing of at least a
4   subset of the plurality of nozzles.

1   4.   (Withdrawn) The method of claim 1, wherein delivering is performed with a
2   printhead having a plurality of nozzles, and wherein determining includes obtaining
3   identification of a subset of the nozzles that should not be used for delivering.

1   5.   (Original) The method of claim 1, wherein distributing is performed sequentially
2   to select and remove different subsets of the print data until at least substantially all of the data
3   elements have been selected and removed.

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1   6.   (Original) The method of claim 1, wherein distributing is performed as a

2   sequence of selections including a first selection and one or more subsequent selections, with

3   each selection creating one of the subsets of the print data and a remaining portion of the data

4   elements, and wherein each subsequent selection is performed on the remaining portion that is

5   present when each subsequent selection is initiated.

1   7.   (Original) The method of claim 6, wherein creating the remaining portion for at

2   least one of the selections includes comparing the subset of the print data created by the at least

3   one selection with a remaining portion of the print data present when the at least one selection

4   was initiated.

1   8.   (Currently Amended) The method of claim 1, wherein distributing the subsets is

2   performed without ~~a predefined~~ using any mask.

1   9.   (Original) The method of claim 1, wherein distributing is performed with an

2   algorithm.

1   10.   (Currently Amended) A method of printing with a flexible number of passes,

2   comprising:

3   obtaining print data including data elements corresponding to a pattern of dots of a

4   colorant included in a swath;

5   determining if at least one constraint on distribution of the print data exists so that

6   forming the pattern of dots of the colorant in only one pass is precluded, and, if the at least one

7   constraint exists, then:

8   (a)   distributing subsets of the data elements with an algorithm to a minimum number

9   of pass assignments permitted by the at least one constraint and the print data, the subsets

10 corresponding to interspersed sub-patterns of the pattern of dots of the colorant, and

11   (b)   delivering the colorant to overlapping regions of a print medium with a minimum

12 number of passes corresponding to the minimum number of pass assignments to form the

13 pattern.

1   11.   (Original) The method of claim 10, wherein obtaining print data includes

2   receiving a contone form of the print data and converting the contone form to a halftone form of

3   the print data, and wherein distributing is performed with the halftone form of the print data.

1   12.   (Withdrawn) The method of claim 10, wherein delivering is performed with a

2   printhead having a plurality of nozzles, and wherein determining includes obtaining a constraint

3   corresponding to a limit on at least one of a rate of firing and a frequency of firing of at least a

4   subset of the plurality of nozzles.

1   13.   (Withdrawn) The method of claim 10, wherein delivering is performed with a

2   printhead having a plurality of nozzles, and wherein determining includes obtaining

3   identification of a subset of the nozzles that should not be used for delivering.

1   14.   (Original) The method of claim 10, wherein distributing is performed

2   sequentially by the algorithm to select and nullify the subsets of the print data until at least

3   substantially all of the data elements have been selected and nullified.

1   15.   (Original) The method of claim 10, wherein distributing is performed by the

2   algorithm as a sequence of selections including a first selection and one or more subsequent

3   selections, with each selection creating one of the subsets of the print data and a remaining

4   portion of the data elements, and wherein each subsequent selection is performed by the

5   algorithm on the remaining portion that is present when each subsequent selection is initiated.

1   16.   (Original) The method of claim 15, wherein creating the remaining portion for at

2   least one of the selections includes comparing the subset created by the at least one selection

3   with a remaining portion of the print data present when the at least one selection was initiated.

1   17.   (Currently Amended) A method of printing with a flexible number of passes,

2   comprising:

3   obtaining print data corresponding to a pattern of dots of a colorant disposed at a subset

4   of positions within an array;

5   obtaining at least one constraint limiting distribution of the print data and defining a

6   minimum number of passes for permitted delivery of the colorant to at least substantially all of

7   the positions of the array;

8   distributing the print data to a plurality of pass assignments corresponding to interspersed

9   sub-patterns of the pattern, the number of pass assignments being less than the minimum

10   number, <u>wherein distributing the print data is performed without using any mask</u>; and

11   delivering the colorant to overlapping regions of a print medium according to the

12   plurality of pass assignments with a corresponding plurality of passes to form the pattern.

1   18.   (Original) The method of claim 17, wherein distributing is performed so that the

2   number of pass assignments is configured to be a minimum permitted by the print data and the at

3   least one constraint.

1   19.   (Original) A program storage device readable by a processor, tangibly

2   embodying a program of instructions executable by the processor to perform a method of

3   printing with a flexible number of passes, the method comprising:

4   obtaining print data having a content defined by data elements corresponding to a pattern

5   of dots of a colorant;

6   determining if at least one constraint on distribution of the print data exists so that

7   forming the pattern in only one pass is precluded, and, if the at least one constraint exists, then:

8   (a)   distributing subsets of the data elements, corresponding to interspersed sub-

9   patterns of the pattern, to a number of pass assignments, the number and the subsets being

10   determined by the content of the print data and the at least one constraint, and

11   (b)   delivering the colorant to overlapping regions of a print medium with passes

12   performed according to the pass assignments to form the pattern.

1   20.   (Currently Amended) An apparatus for printing with a flexible number of passes,

2   comprising:

3   a controller configured to obtain print data having a content defined by data elements

4   corresponding to a pattern of dots of a colorant and also configured to determine if at least one

5   constraint on distribution of the print data exists so that forming the pattern in only one pass is

6   precluded, the controller including a data distribution mechanism configured, if the at least one

7   constraint exists, to distribute subsets of the data elements, corresponding to interspersed sub-

8   patterns of the pattern, to a number of pass assignments, the number and the subsets being

9   determined by the content of the print data and the at least one constraint so that the pattern of

10   dots of the colorant will be formed on overlapping regions of a print medium with passes

11   performed according to the pass assignments.

1   21.   (Original) The apparatus of claim 20, wherein the data distribution mechanism

2   includes an algorithm and operates independently of predefined masks.

1   22.   (Original) A system for printing with a flexible number of passes, comprising:

2   a controller configured to obtain print data having a content defined by data elements

3 corresponding to a pattern of dots of a colorant and also configured to determine if at least one

4 constraint on distribution of the print data exists so that forming the pattern in only one pass is

5 precluded, the controller including a data distribution mechanism configured, if the at least one

6 constraint exists, to distribute subsets of the data elements, corresponding to interspersed sub-

7 patterns of the pattern, to a number of pass assignments, the number and the subsets being

8 determined by the content of the print data and the at least one constraint; and

9   one or more image forming devices configured to deliver the colorant to the overlapping

10 regions of a print medium with a plurality of passes corresponding to the number of pass

11 assignments to form the pattern of dots.

1   23.   (Original) The system of claim 22, wherein the one or more image forming

2 devices include one or more printheads.

1   24.   (Original) A system for printing with a flexible number of passes, comprising:

2   means for obtaining print data having a content defined by data elements corresponding

3 to a pattern of dots of a colorant;

4   means for determining if at least one constraint on distribution of the print data exists so

5 that forming the pattern in only one pass is precluded;

6   means for distributing, if the at least one constraint exists, subsets of the data elements,

7 corresponding to interspersed sub-patterns of the pattern, to a number of pass assignments, the

8 number and the subsets being determined by the content of the print data and the at least one

9 constraint; and

10   means for delivering the colorant to overlapping regions of a print medium with passes

11 performed according to the pass assignments to form the pattern.

1   25.   (Original) A method of printing with a flexible number of passes, comprising:

2   a step for obtaining print data having a content defined by data elements corresponding to

3   a pattern of dots of a colorant;

4   a step for determining if at least one constraint on distribution of the print data exists so

5   that forming the pattern in only one pass is precluded, and, if the at least one constraint exists,

6   then:

7   (a)   a step for distributing subsets of the data elements, corresponding to interspersed

8   sub-patterns of the pattern, to a number of pass assignments, the number and the subsets being

9   determined by the content of the print data and the at least one constraint, and

10   (b)   a step for delivering the colorant to overlapping regions of a print medium with

11 passes performed according to the pass assignments to form the pattern.

1   26.   (New) The method of claim 1, wherein delivering the colorant comprises

2   delivering a single colorant to overlapping regions of the print medium with the passes

3   performed according to the pass assignments, wherein the single colorant is one colorant from

4   among plural colorants that are present in the print data.